



## What are Tornado Emergencies?

by Jeff Johnson, Warning Coordination Meteorologist

In 2010, The National Weather Service in Des Moines adopted a "tornado emergency" policy. Fortunately, no tornado emergencies were declared in 2010! The policy will remain in effect for 2011 and below is a review of the tornado emergency policy:

### Tornado Emergency Policy

The "tornado emergency" is NOT a new warning type! It is a high-impact call-to-action for high end tornado events. The broadcast media is strongly encouraged to read the "tornado emergency" call-to-action on the air and stress the high-end nature of the threat.



### Definition

A TORNADO EMERGENCY means that significant, widespread damage with a high likelihood of numerous fatalities is expected to continue with a strong and violent tornado. A tornado emergency is not a new warning product, but a new, visible and high impact call-to-action.

### Intended Purpose

- ⇒ To motivate and provide a sense of urgency to persons in the path of this storm to take immediate shelter in a reinforced structure that offers maximum protection from destructive winds.
- ⇒ To communicate to state, local, and county officials and emergency responders that they should prepare for immediate search and rescue operations.
- ⇒ To communicate the need to prepare for immediate medical emergencies, evacuation measures, and emergency sheltering.

### Format

There will be a statement in the third bullet of the warning plus a headline at the top of the Severe Weather Statement that states, "...TORNADO EMERGENCY FOR [GEOGRAPHIC AREA]..." The "tornado emergency" would be issued predominately in Severe Weather Statements since it is highly likely that a tornado warning would be in effect.

### Criteria

- ⇒ A large and catastrophic tornado has been confirmed and will continue (A radar signature alone is not sufficient).
- ⇒ It is going to have a high impact and/or affect a highly vulnerable population (Historically, this probably has happened once every 10 years in our warning area).
- ⇒ Numerous fatalities are expected.

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## Editors

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Cover photo  
courtesy of Benna  
Aerial Photography

# Summary of the 2010 Christmas Snowstorm

by Jacob Beitlich, Meteorologist Intern

## Synopsis

An upper level disturbance crossed the Rocky Mountains of Idaho and Montana on Thursday and headed towards Iowa. This disturbance caused a prolonged period of light to moderate snowfall to occur across Iowa beginning Thursday night December 23 and lasting through Friday evening December 24. Snowfall totals ranged from 2 to 5 inches in the southwestern half of the state, and from 4 to 8 inches across the northeastern half of the state, with a narrow band of 8+ inches extended along a line from about Mason City, through Waterloo, down toward Davenport (Figure 1).

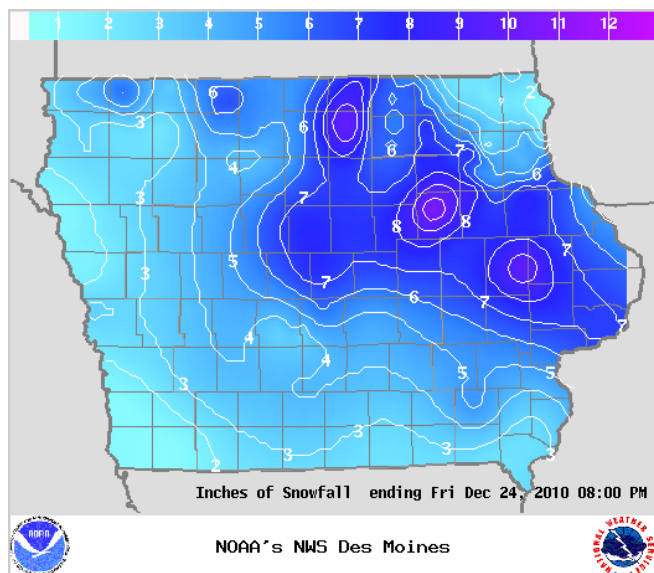


Figure 1: The image above shows the preliminary snowfall totals that were reported as of 8PM on Friday evening. The heaviest snow fell along a line from Mason City, through Waterloo, to Davenport.

The snow was generally light to moderate, but there were a few embedded bands of heavier snowfall with this system that reduced visibilities to around a mile or less at times. A radar image from 10AM Friday morning shows a couple of the heavier bands across Iowa. One is located just to the northwest of Des Moines, while the other is located over Southeastern Iowa and Northern Missouri (Figure 2). A large scale view from the same time shows the snowfall across the Midwest, with the single snowflake next to the observation station indicating that snow is occurring at those locations (Figure 3). The visible satellite image from Friday morning at 10AM shows how the entire Midwest was blanketed by clouds (Figure 4). Finally, the last image shows the upper level disturbance (also known as a "shortwave") that was responsible for the snowfall across Iowa (Figure 5). Both satellite images are valid around 10AM Friday morning.

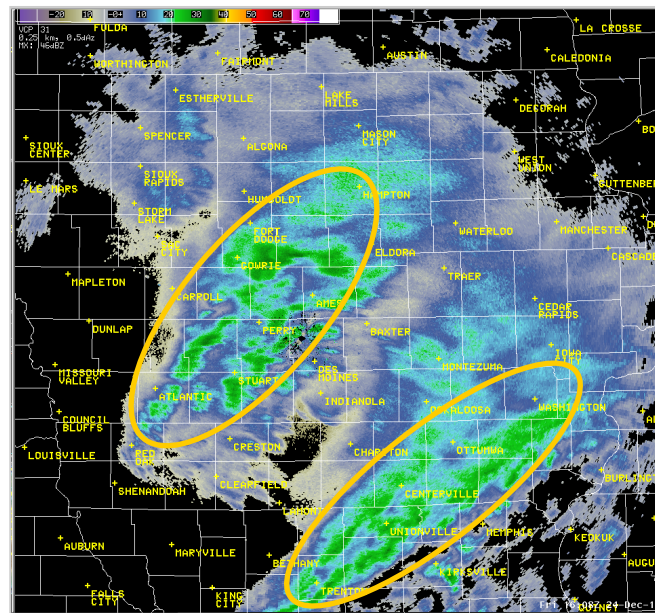


Figure 2: This radar image shows the heavier bands (orange ovals) within the area of widespread snowfall. Counties are outlined in white, and the city names are listed in yellow. This image is from 10AM Friday morning.

Light winds accompanied this system, so there was minimal blowing and drifting of snow. Rather snow tended to gather on trees and other objects creating a picturesque Christmas scene (Figure 6).

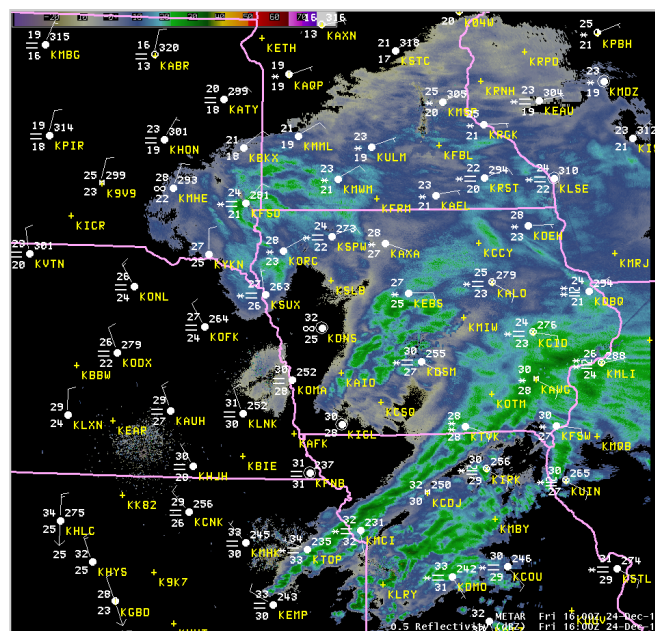


Figure 3: The mosaic radar image above shows a large scale depiction of radar reflectivity centered around Iowa. The state borders are in pink, the observation abbreviations are listed in yellow, and the current weather is indicated by the white symbols. This image is from 10AM Friday morning.

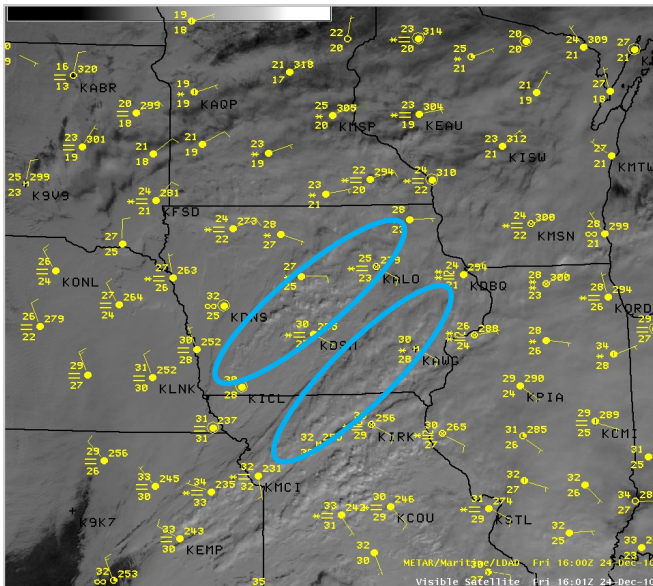


Figure 4: The visible satellite image above shows how clouds blanketed nearly the entire upper Midwest. The area of clouds with the most texture (blue circles) is in the exact location of the heaviest snow band. The clouds in this region extend deeper into the atmosphere and are able to produce more snow. This image is valid from 10AM Friday morning.

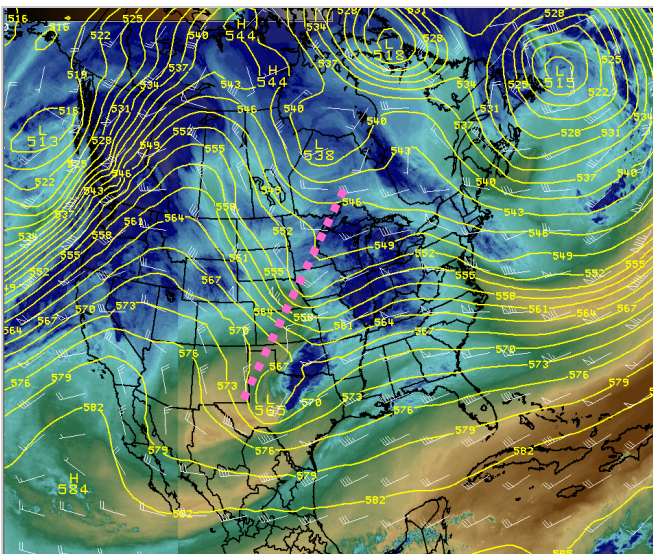


Figure 5: The image above shows the amount of water vapor in the air in the upper levels of the atmosphere. The brown colors indicate drier air, while the blue colors shows air that contains a lot of moisture. The yellow lines show the height of the 500mb level, which is roughly about 3 miles above the surface. Overlaying the 500mb heights with the water vapor imagery is a useful way to identify upper level disturbances such as shortwave troughs (pink dashed line) which in this case was responsible for producing the snowfall. This image is valid from 10AM Friday morning.

INCHES	LOCATION	ST	COUNTY	TIME
-----	-----	--	-----	-----
10.5	1 ESE WATERLOO	IA	BLACK HAWK	0600 PM
10.5	WATERLOO	IA	BLACK HAWK	0506 PM
10	GARNER	IA	HANCOCK	0745 PM
9.5	MASON CITY	IA	CERRO GORDO	0600 PM
9	READLYN	IA	BREMER	0454 PM
8	LA PORTE CITY	IA	BLACK HAWK	0448 PM
7.5	2 ESE WEBSTER CITY	IA	HAMILTON	0310 PM
7.5	BEAMAN	IA	GRUNDY	0225 PM
7.2	AMES	IA	STORY	0627 PM
6.5	RINGSTED	IA	EMMET	0343 PM
6.4	6 W BELMOND	IA	WRIGHT	0503 PM
5.8	4 NNW ANKENY	IA	POLK	0610 PM
5.3	1 SSW POLK CITY	IA	POLK	0600 PM
4.7	3 W NEWTON AIR-	IA	JASPER	0316 PM
4.3	WINDSOR HEIGHTS	IA	POLK	0254 PM
4.1	2 SW GRIMES	IA	DALLAS	0319 PM
4	1 W NEW VIRGINIA	IA	WARREN	0702 PM
3.8	DES MOINES INT AIRPORT	IA	POLK	0600 PM

Figure 6: The pictures at right show the snowfall in central Iowa Friday afternoon. Light winds with the system meant snow tended to collect on objects.



Fun Fact: In 1983, an unseasonably warm weather pattern led to high temperatures in the lower 80s on March 3rd. A high temperature of 81 degrees Fahrenheit occurred at Des Moines, IA which made it the earliest date of the year in which the temperature reached over 80 degrees at Des Moines.

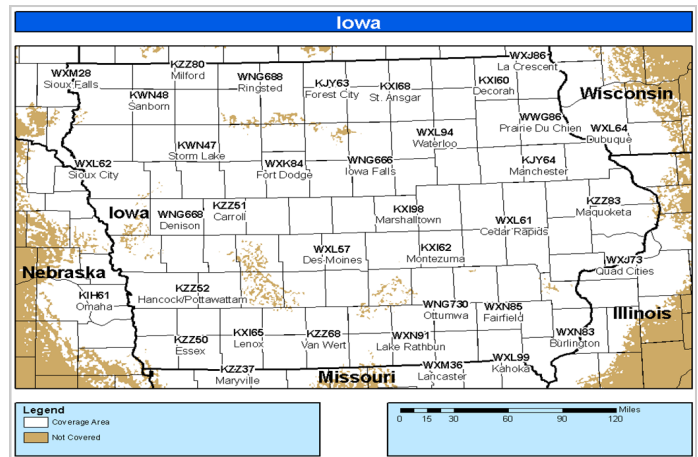
## NOAA All Hazards Weather Radio Receiver Checkup Guidelines

by Robert DeRoy Data Acquisition Program Manager

Severe Weather season is here! As with smoke detectors, receivers should be checked at least once at the beginning of each season to be certain that the unit is working properly and correctly programmed to receive alert messages.

Some basic items that should be checked:

1. **Battery Check:** Install a new backup battery at the beginning of the season. Make sure the unit is plugged in while changing the battery to avoid needing to reset time and other wake up alarm features.
2. **Receiver placement is critical:** The receiver should be placed where alerts can be heard at any time of the day or night. Some families or individuals locate a receiver in the master bedroom to be certain that night time alerts are heard.
3. **Safe Room Receiver:** A receiver should be available in your safe location at home and at work!
4. **Radio Frequency matters:** Be certain that the radio is tuned to the correct frequency for the county in which you live or work. The links below will display pages that explain which counties <http://www.nws.noaa.gov/nwr/Maps/PHP/iowa.php> are served by each transmitter.
5. **Mobile Receiver:** If you use a mobile receiver for work or recreation in another county, it may be necessary for you to tune the radio to more than one frequency. Be sure that all counties in which you live or travel are programmed into your receiver.
  - a) **County codes, transmitter locations and channel frequencies can be obtained for Iowa at:** <http://www.nws.noaa.gov/nwr/Maps/PHP/iowa.php>
  - b) **Check out the NOAA All Hazards Weather Radio section of our website at:** <http://www.crh.noaa.gov/dmx/?n=nwr>
  - c) **A note about receiver Channels:** Some 7 channel receivers do not display the frequency but have buttons or number displays for the frequency.
    - 1) Channel 1 = 162.400 MHz
    - 2) Channel 2 = 162.425 MHz
    - 3) Channel 3 = 162.450 MHz
    - 4) Channel 4 = 162.475 MHz
    - 5) Channel 5 = 162.500 MHz
    - 6) Channel 6 = 162.525 MHz
    - 7) Channel 7 = 162.550 MHz



**Questions** regarding NOAA All Hazards Weather Radio receivers may be sent to [Robert.Deroy@noaa.gov](mailto:Robert.Deroy@noaa.gov).

## 2010 Cooperative Observer Length of Service Awards

by Brad Fillbach, Hydro-Meteorological Technician/Cooperative Program Manager



- John Wibholm of Popejoy receives his 10 year Length of Service Award. No picture available.
- Darin Sloss (top left) receives the 25 year Institutional Award on behalf of the Guthrie Center, Iowa, Water Pollution Control Plant.
- Ardell (top right, left in picture) and Kevin (top right, right in picture) McCunn of Mas-sena, Iowa receive their 10 year Length of Service award.
- Bill Mateer (bottom left) of Sheffield, Iowa receives his 20 year Length of Service award.
- Tom Bell (bottom right) of Story City, Iowa receives his 15 year Length of Service award from Brad Fillbach (left), HMT, WFO Des Moines.

### Climatological Data for November through February 2011

Location	Month	Average Temp	Departure	Highest	Lowest	Rain / Snow	Departure
Des Moines	Nov	40.9°F	+3.0°F	73°F (9 <sup>th</sup> )	16°F (26 <sup>th</sup> , 25 <sup>th</sup> )	2.29" / T	+0.19" / -4.5"
	Dec	23.5°F	-1.4°F	61°F (30 <sup>th</sup> )	1°F (12 <sup>th</sup> )	0.77" / 9.7"	-0.56" / +2.0"
	Jan	18.5°F	-1.9°F	41°F (5 <sup>th</sup> )	-3°F (21 <sup>st</sup> )	1.07" / 12.8"	+0.04" / +4.0"
	Feb	26.7°F	+0.1°F	68°F (17 <sup>th</sup> )	-9°F (8 <sup>th</sup> )	0.77" / 10.3"	-0.42" / +2.1"
Mason City	Nov	34.2°F	+1.4°F	70°F (9 <sup>th</sup> )	11°F (27 <sup>th</sup> , 25 <sup>th</sup> )	2.64" / T	+0.68" / M
	Dec	15.5°F	-3.5°F	39°F (30 <sup>th</sup> )	-9°F (13 <sup>th</sup> )	2.67" / 27.5"	+1.59" / M
	Jan	10.7°F	-3.2°F	32°F (29 <sup>th</sup> , 28 <sup>th</sup> )	-22°F (21 <sup>st</sup> )	1.07" / 14.7"	+0.09" / M
	Feb	19.6°F	-1.0°F	56°F (17 <sup>th</sup> )	-15°F (10 <sup>th</sup> , 8 <sup>th</sup> )	0.94" / 5.0"	+0.02" / M
Waterloo	Nov	36.8°F	+1.7°F	70°F (9 <sup>th</sup> )	13°F (26 <sup>th</sup> )	1.51" / T	-0.59" / -4.8"
	Dec	16.9°F	-4.7°F	43°F (30 <sup>th</sup> )	-14°F (19 <sup>th</sup> )	2.05" / 24.7"	+0.94" / +17.2"
	Jan	13.7°F	-2.4°F	33°F (17 <sup>th</sup> , 5 <sup>th</sup> )	-21°F (21 <sup>st</sup> )	1.04" / 13.3"	+0.20" / +5.1"
	Feb	21.7°F	-0.9°F	62°F (17 <sup>th</sup> )	-15°F (10 <sup>th</sup> )	1.72" / 9.2"	+0.67" / +1.9"
Ottumwa	Nov	41.2°F	+1.8°F	72°F (10 <sup>th</sup> , 9 <sup>th</sup> )	16°F (26 <sup>th</sup> )	1.10" / M	-1.32" / M
	Dec	23.0°F	-3.6°F	57°F (30 <sup>th</sup> )	-4°F (13 <sup>th</sup> )	0.94" / M	-0.38" / M
	Jan	17.8°F	-4.2°F	39°F (5 <sup>th</sup> )	-7°F (21 <sup>st</sup> )	0.40" / M	-0.60" / M
	Feb	25.6°F	-2.3°F	68°F (17 <sup>th</sup> )	-10°F (3 <sup>rd</sup> )	1.03" / M	-0.13" / M

## Fire Weather Products Available by Frank Boksa, General Forecaster

This Spring, the National Weather Service in Des Moines will start issuing Fire Weather Planning Forecasts beginning at 6 AM, Tuesday March 1<sup>st</sup>. The Fire Weather Planning Forecast will be issued daily through November 15<sup>th</sup>. The purpose of this product is to provide data to those with prescribed burn responsibilities to plan for these burns up to a week in advance. The forecast product is a county by county forecast where the first 36 hour period is in a tabular format with parameters specific to planning a prescribed burn.

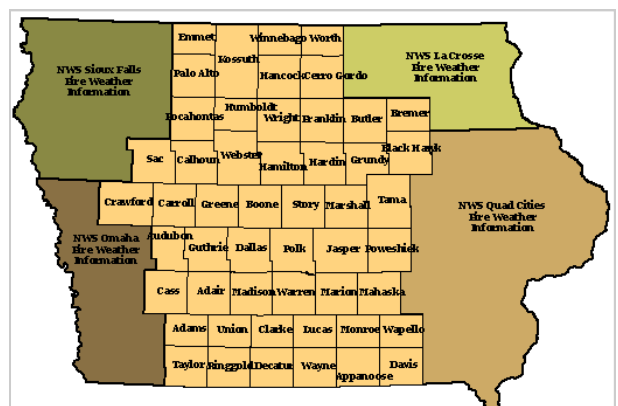
We will also be issuing a Grassland Fire Danger Index product on an as-needed basis. This product should be used by the public as an advisory that high winds and low humidity combined with low fuel moisture makes any kind of burning dangerous. State and local officials can use this product to warn local fire departments of a high fire danger risk so that fire departments can make readiness plans should their services be needed. The primary dates that this product will be issued as needed is March 1<sup>st</sup> through May 1<sup>st</sup> and September 1<sup>st</sup> through November 15<sup>th</sup>. However, this product may be issued if conditions exist for a grassland fire danger. The National Weather Service will use the data received from several County Conservation Board members this year to accurately determine fuel moisture or greenness of the fuel.

For those who can request spot forecasts, please remember to put your request in the night before a burn is planned. You will automatically receive an updated forecast the morning of the burn.

The National Weather Service in Des Moines is looking forward to providing fire weather forecasts to a new user, the Iowa Natural Heritage Foundation.

Have a safe burn season!

Fire weather products available at: [www.weather.gov/dmx/firewx.php](http://www.weather.gov/dmx/firewx.php)



# 75th Anniversary of the Year of Weather Extremes in Iowa

by Jim Lee, General Forecaster

During the Dust Bowl years of the 1930s a relatively dry climate pattern allowed for several periods of highly volatile Iowa weather, with the most remarkable extremes occurring in 1936. To this day the winter of 1936 still ranks as the coldest on record in Iowa in terms of statewide average temperature, and the summer of 1936 ranks as the hottest (see Figures 1 and 2).

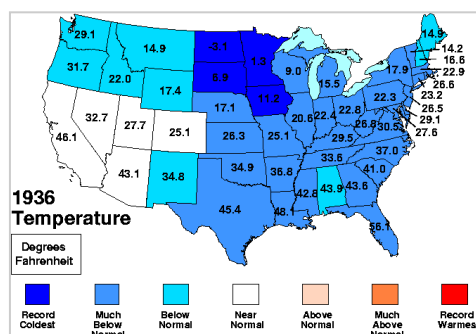


Figure 1. Statewide average temperatures from December 1935 through February 1936.

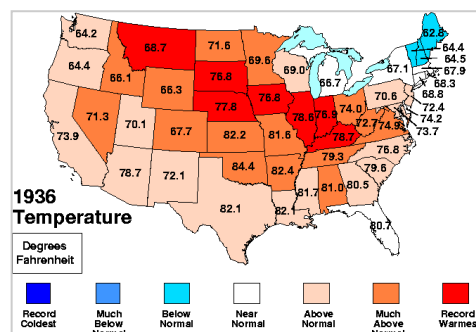


Figure 2. Statewide average temperatures from June through August 1936.

In January and February a series of snow storms and arctic blasts struck Iowa, resulting in a period of brutal winter weather still remembered today by our elder citizens. The coldest temperatures came during the third week of February, with every station in Iowa reporting lows below zero on six consecutive days from the 14<sup>th</sup>-19<sup>th</sup>. At many Iowa



Figure 3. A shovel crew attempts to clear the railroad tracks near Forest City, IA on 02/23/1936. Note the on-coming locomotive in the center background.

stations February of 1936 remains one of the coldest months on record, including at Des Moines where the average temperature for the month was only 8.0 degrees. Frequent blizzards made travel impossible across most of the state and by February 22<sup>nd</sup> Sioux Center reported 42 inches of snow on the ground, which is one of the highest snow depths on record in Iowa.

Weather Bureau officials in Des Moines described this period as follows: "Huge drifts, 10 to 15 feet deep, were formed in nearly all portions of the state. Every highway cut was filled level full, whatever the depth... as a result more than half of the farms of Iowa were without vehicular communication with the outside world for a period of about 7 weeks. Farmers struggled against terrible odds day after day shoveling paths and tunnels through the snow banks... where highway transportation was impossible, much corn was burned for fuel on the farms and many precious old trees were sacrificed. A south-bound Rock Island passenger train in central Iowa was snowbound for about two days. The 61 passengers were put to bed in Pullman berths by candle light and were fed with food obtained from a nearby freight car. Wild life, such as pheasants, quails, crows and other birds, and even skunks, were found standing out in the

open, frozen or starved to death." (see Figures 3-5).

Remarkably, one of the most severe winters on record in Iowa was followed several months later by the hottest summer in state history. Record-breaking heat smothered the region for weeks on end, peaking in July but continuing well into August. July of 1936 remains the hottest month on record in Iowa with a statewide average temperature of 83.2 degrees. The heat was made particularly unbearable by very warm overnight temperatures which prevented relief even during the early morning hours (see Figure 6). For example, Davenport reported a high of 111 degrees

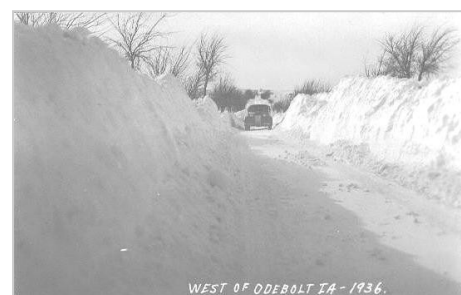


Figure 4. A car makes its way down a partially cleared rural road near Odebolt in February of 1936.

(Continued on page 7)

(Continued from page 6)

and a low of 84 degrees on the 14<sup>th</sup> thus setting its all-time high and warm low temperature records on the same day. At Des Moines the temperature reached triple digits on an incredible 15 consecutive days from July 3-17, including a high of 108 degrees on the 15<sup>th</sup>. The hottest temperatures of the summer were reached on July

25<sup>th</sup> when a reading of 117 degrees was reported at Atlantic and Logan, just one degree shy of the all-time Iowa record. Many stations across about the southern half of Iowa tied or broke their all-time records that afternoon, including Des Moines with a high of 110 degrees.

July of 1936 was so excessively hot over such a large area of the country that even today 11 states have all-time statewide high temperature records that were set or tied in that month. Weather Bureau officials in Des Moines described the effects of the prolonged heat as follows: "The hot weather caused a great deal of suffering and scores of persons died as a result, while the heat was also a contributing factor in the deaths

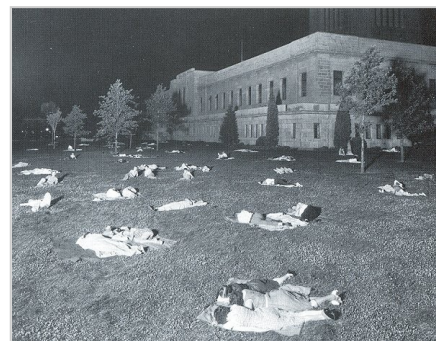


Figure 6. Residents of Lincoln, NE seek relief outside the State Capitol in their attempt to sleep through the sweltering overnight heat of July 1936.

of hundreds, particularly among the aged. Farm animals suffered greatly. Water supplies were depleted, and all vegetation was baked to such a degree of extreme dryness that a critical fire danger developed."



Figure 5. Workers attempt to free a snow-bound train in northwestern Bremer County.

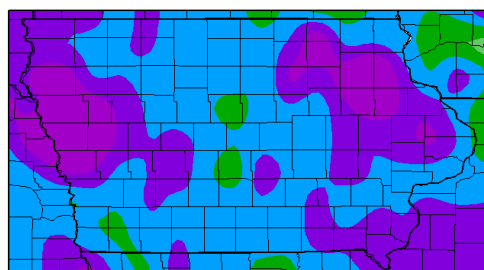
## Iowa Statewide Averages and Rankings for Temperature and Precipitation

by Craig Cogil, Lead Forecaster

Month	Temperature	Departure from Normal	Rainfall	Departure from Normal	Temperature Ranking	Precipitation Ranking
December 2010	19.5°F	-3.1°F	1.24"	+0.01"	29 <sup>th</sup> Coolest	57 <sup>th</sup> Wettest
January 2011	15.1°F	-2.7°F	0.90"	-0.05"	42 <sup>nd</sup> Coolest	67 <sup>th</sup> Driest
February 2011	22.8°F	-1.4°F	1.45"	+0.47"	69 <sup>th</sup> Coolest	51 <sup>st</sup> Wettest
<b>Winter 2010-2011</b>	<b>19.1°F</b>	<b>-2.9°F</b>	<b>3.59"</b>	<b>+0.43"</b>	<b>34<sup>th</sup> Coolest</b>	<b>51<sup>st</sup> Wettest</b>

Rankings are based upon 138 years of records. The January and February numbers cover the past 139 years. All values are preliminary.

Departure from Normal Temperature (°F)  
12/1/2010 – 2/28/2011



Generated 3/2/2011 at HPRC using provisional data.

Regional Climate Centers

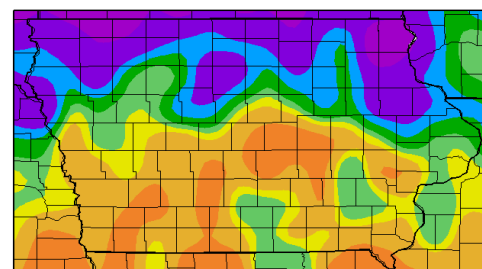
### Precipitation

Precipitation amounts were varied across Iowa during the winter with the north seeing the most rain and snow. Central and Southern Iowa saw precipitation amounts generally at or below normal but not dry enough to keep the statewide average from remaining slightly above normal. All the winter months saw precipitation spread out fairly evenly with February seeing the largest departure above normal. The average snowfall across Iowa was 34.6 inches. This was 12.8 inches greater than normal and resulted in the 9<sup>th</sup> snowiest for the three month period on a statewide average.

### Temperatures

Temperatures were below normal for the fourth winter in a row across Iowa. Extensive snow cover once again helped to keep temperatures from climbing above normal for much of the winter. The low temperatures were fairly ubiquitous across the state with no geographical trend in the cold readings. Despite the relatively cold readings, there was a decent thaw in the middle of February which helped to melt much of the snow cover across the state.

Percent of Normal Precipitation (%)  
12/1/2010 – 2/28/2011



Generated 3/2/2011 at HPRC using provisional data.

Regional Climate Centers

## Spring Flood Outlook for 2011

by Jeff Zogg, Senior Service Hydrologist

A large swath of the U.S. is at risk of moderate to major flooding this spring, from northeastern Montana through western Wisconsin following the Mississippi River south to St. Louis. In Iowa, the greatest risk of significant flooding is along the Mississippi River in the far east, as well as portions of the Big Sioux River in the far northwest. Along both of those rivers there is a greater than 50% chance of major flooding. The Upper Des Moines, Little Sioux, Cedar-Iowa, Wapsipinicon, Turkey and Maquoketa River basins have above average risk of flooding. The flood risk is lowest in the south central and southwest portions of the state where the risk is near normal.

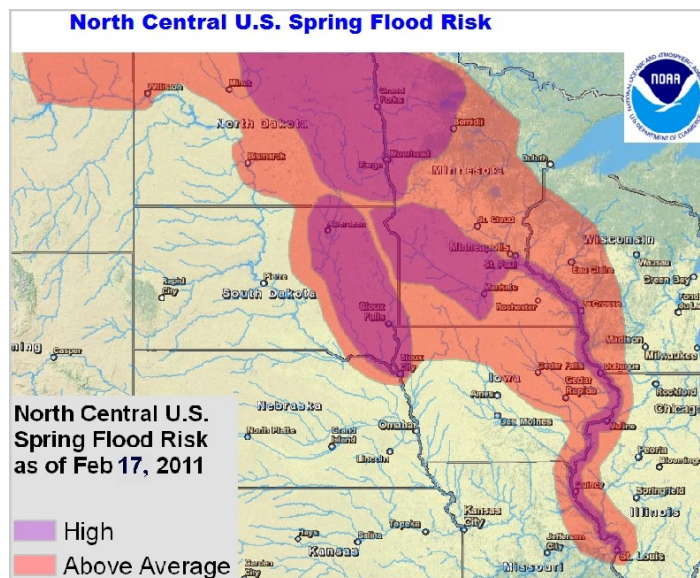
There are multiple reasons for the anticipated floods. Stream levels across much of Iowa and the north central U.S. are running above to much above normal. Although soil moisture is running near normal across much of Iowa, it is running above normal in the Mississippi River basin north of Iowa. Finally, although the snow pack is running near normal, a lot of water remains trapped in the snow pack from South Dakota through Minnesota and into Wisconsin, waiting to flow into rivers.

In March and April, as temperatures rise and the snow melts, the moist soil will enhance runoff, causing streams and rivers to swell. With rivers already running above normal, they will not be able to take on as much water before they overflow their banks. The timing and the rate of snow melt and any rain that falls during snow melt contribute to the magnitude and extent of flooding.

The risk of flooding will remain higher than normal even through at least late spring. Heavy rainfall may result in additional or prolonged flooding, even after the snow melts. In addition, ice jams will continue to cause localized flooding with rapidly fluctuating river stages through at least mid-March.

With all the recent flooding and heavy rainfall across Iowa, it can be difficult to change gears and think about drought. But we may have to do so, at least across southwestern portions of the state. Since last fall, drought conditions in the southern U.S. have been creeping northeastward toward Iowa. The NOAA outlook through late spring calls for below normal precipitation in western Iowa. Thus there is a possibility that abnormally dry to moderate drought conditions may enter southwestern Iowa by early summer.

The NWS has already issued two spring flood outlooks this season: on January 27th and on February 17th. The third and final outlook is scheduled for March 3rd. Refer to the NWS Des Moines Web site at <http://www.weather.gov/desmoines> for more information on these outlooks, as well as information on flood watches and warnings.



## Spotter Training 2011

by Jeff Johnson, Warning Coordination Meteorologist

Each year, National Weather Service meteorologists travel to nearly all of the 51 counties we serve to provide a comprehensive multi-media spotter training presentation. The training sessions are generally hosted by the Emergency Manager of each county, or other interested groups like amateur radio clubs. Anyone who is interesting in storm spotting is invited to attend the course. The course contains information about severe weather climatology, severe storm types which impact Iowa, different specific severe weather threats which occur in Iowa, how and what to report to the National Weather Service, spotter safety and severe weather communications. Spotter training classes are free of charge.

Most spotter training classes for 2011 have already been scheduled. Refer to our spotter schedule at [www.weather.gov/dmx/?n=spotterinfo](http://www.weather.gov/dmx/?n=spotterinfo) for the location and date of a spotter training talk near you. Be sure to visit our new SKYWARN page on the National Weather Service website at <http://www.crh.noaa.gov/dmx/?n=skywarn>. We hope to see you at a spotter training class this spring!



## Employee Spotlight

My name is Frank Boksa. I was born and raised in Chicago, IL. I have always had a great interest in science and pursued an education in Earth Science. I received a Bachelors Degree in Geology from Northeastern Illinois University in 1984 hoping to work as a consultant in the oil industry. Unfortunately jobs in that market dried up just before I graduated. I remained in school and earned a Bachelors Degree in Meteorology from Northern Illinois University in 1986. I started my career in the National Weather Service during the summer of 1987. My first assignment was to report to Casper, Wyoming as an intern. After the culture shock of moving from a city of 8 million people to a town of 20,000 people, I gained an appreciation for the very different weather that can occur in the mountains. I was promoted to forecaster and moved to Des Moines in 1994 where I gained a very healthy respect for severe weather. While I find every aspect of this profession rewarding, I most enjoy the public outreach aspect of this job, giving spotter classes and talks to schools.

I met my wife here in Des Moines and together we raise our four children. I enjoy traveling, boating, golf and my family.



Frank operating the Van De Graff machine during the open house at the Des Moines National Weather Service in 2008.

## March is Flood Awareness Month in Iowa

by Jeff Zogg, Senior Service Hydrologist

The National Weather Service in Des Moines is working with The Iowa Insurance Division, the Iowa Department of Natural Resources, the Iowa Homeland Security and Emergency Management Division and the Rebuild Iowa Office to encourage flood awareness, safety and mitigation for Iowans. This year, the NWS's National Flood Safety Awareness Week runs from March 14-18, in conjunction with Governor Brandstad's declaration of March as Flood Awareness Month in Iowa.

Why flood awareness? The answer is simple. Flooding is the #1 storm-related killer. It kills more people than tornadoes or lightning. Most of the fatalities occur when people drive or walk into flooded areas and then either drown or are swept away to their deaths. Flooding also takes many different forms, from river flooding to flash flooding to snow melt flooding; and occurs in any month of the year, any time of day and is a threat in almost any place.

It's important you know where to find important information on flood preparedness, where to obtain flood insurance if it is required in your area, and general safety tips to help keep you, your family and your property safe. For more information, visit

the NWS flood safety awareness Web site at <http://www.floodsafety.noaa.gov/>. Also, visit the Iowa Flood Awareness Web site at <http://www.DontTestTheWatersIowa.gov/>. Finally, the Federal Emergency Management Agency also provides a general disaster preparedness Web site at <http://www.ready.gov/>.

The NWS has many different ways to help you keep up with the latest flood watches, warnings and forecasts. One is NOAA Weather Radio which broadcasts flood watches and warnings. Information is also available on the Internet via the Advanced Hydrologic Prediction Service (AHPS), at <http://www.weather.gov/ahps>. AHPS also includes the latest flood watches, warnings and forecasts.

Hopefully, flooding will never affect you. But if it does, we want you to be prepared for whatever comes your way.



# Outlook for the Spring into the Summer of 2011

by Miles Schumacher, Lead Forecaster

The winter of 2010-11 turned out to be cooler than normal with plenty of snow, but not as severe as the previous winter. The La Niña pattern in the Pacific persisted as expected, however the winter turned out to be a degree or two cooler than a typical first year La Niña winter. The reason for this is a pattern called a negative Atlantic Oscillation, whereby the cold air that normally flows southeast into eastern Canada is diverted south into the Continental U.S. Typically we break down temperature patterns into terciles of three equally distributed populations of below normal, normal, and above normal temperatures. Though the winter was cooler than normal, it will fall into the normal tercile.

As we head into the spring and summer seasons, many have concerns of whether the cooler than normal winter will lead to a hot summer or if the cool pattern will continue. La Niña typically results in cooler than normal weather over the northwest into the north central states for at least the first half of spring. Thereafter, there is not a strong correlation with La Niña going forward into the summer. There is a slight tendency toward warmer and drier summers however. Currently the La Niña is moderate in strength as depicted by the large area of colder than normal water in the equatorial Pacific as shown in Figure 1. It appears it will remain a factor through the spring, and may persist in some form into the summer.

The atmospheric response to La Niña is likely to be significant into the early to mid spring months. Model forecasts suggest La Niña will remain strong at least through April and perhaps into May. Thereafter weakening is indicated. Figure 2 shows the central Pacific Sea Surface Temperature departure (black line) and a series of forecasts (red and blue lines) through the time period based on

the initial conditions from 12-21 February 2011. As can be seen from the figure, there is a significant spread in the forecasts from the mid summer months forward. It does appear that during this summer weak La Niña conditions will prevail. The influence of La Niña is much weaker in the summer than during the winter. Though there is some tendency toward warmer than normal conditions in the summer, it is not statistically significant. There is a stronger correlation between La Niña and summer precipitation. It is not strong, but is statistically significant with a 60-70% probability of below normal.

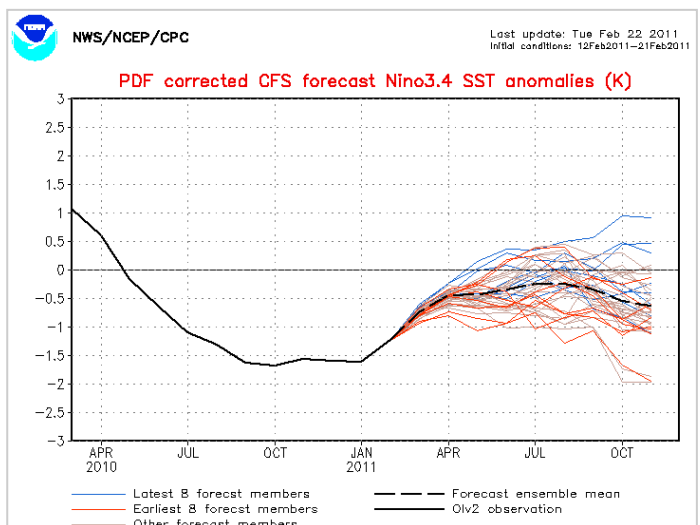


Figure 2: Sea surface temperature departure for the past year and projection into the Fall of 2011. Departure in degrees K is shown on the ordinate, with time on the abscissa.

Although in meteorology no two years are the same strictly speaking, one can look at weather patterns of the recent past to give some indications of near term weather trends in the future. This forecast is based on the best fit from several of the years that were similar to the winter pattern so far. Considerations were also made for the state of La Niña and other factors that control our weather. It is likely that La Niña will have an influence on the weather this spring. There can be considerable variability from one La Niña event to another. The wide variation is in part due to the fact that a typical La Niña spring features the jet stream flowing from the southwest to Iowa, however that pattern is not that stable and major fluctuations occur. This can lead to significant changes in temperatures and an active storm track. Looking at years similar to the recent past suggests temperatures are likely to average a little below normal over a large part of Iowa, especially across the north. Precipitation for the spring is a tough call. It is likely that several storms will lift out of the southwest U.S., and move

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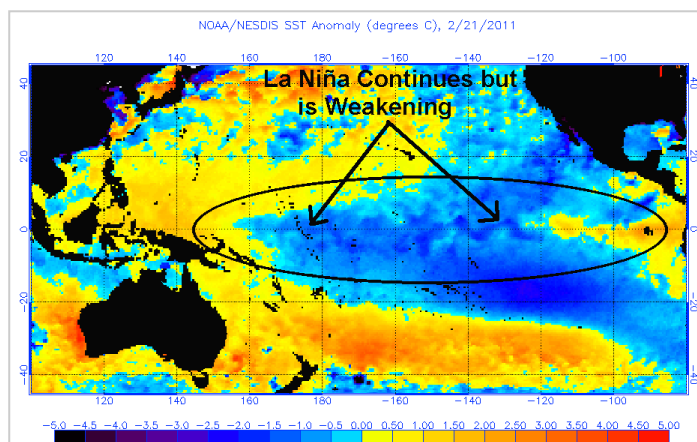


Figure 1: Sea surface temperature departure from normal, equatorial Pacific.

(Continued from page 10)

through the central states. Many times these are fast moving storms and moisture doesn't reach the state until the system reaches eastern Iowa. This favors somewhat drier conditions over the west and wetter than normal over the east. See Figure 3 for details.

Looking briefly at the upcoming summer, it appears that temperatures are most likely to average fairly close to normal based on past years following winters similar to this winter. With La Niña expected to remain through the summer in at least a weak state, there are indications for rainfall to fall short of normal. Looking at the summer following years that were similar to the past winter it appears

the greatest chance for drier than normal conditions will be during the last half of the summer. Most of the similar years showed June rainfall near normal. However, looking at July showed that 70 percent of the years exhibited drier than normal conditions, with that trend continuing into August. Although there are no indications of a major drought, it does appear the risk of the summer falling 2-4 inches short of normal rainfall is there.

These outlooks are based more heavily on statistics than many of the methods used by the [Climate Prediction Center](#). The complete set of official forecasts from the Climate Prediction Center can be found on our [website](#).

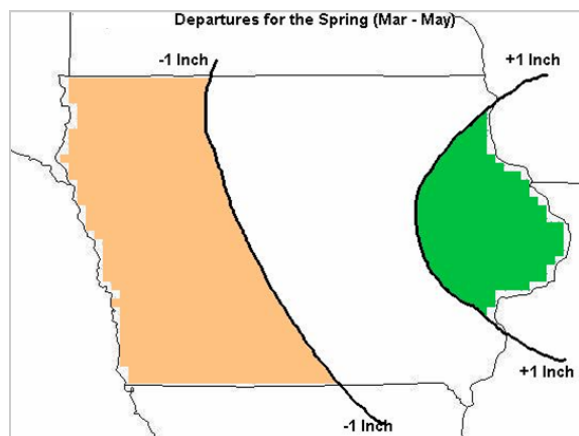
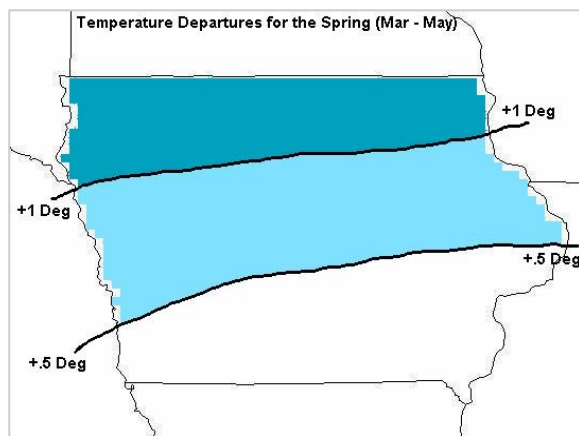


Figure 3: Iowa mean temperature (left) and precipitation (right) departure for the Spring months (March through May).

## Severe Weather Awareness Week: April 4-8

by Aubry Wilkins, General Forecaster

As winter begins to draw to a close, it can only mean one thing: spring is right around the corner. And with spring comes severe weather. To help prepare Iowans for the upcoming severe weather season, Iowa Homeland Security and Emergency Management and the National Weather Service have declared the week of April 4-8, 2011 as Severe Weather Awareness Week. Severe Weather Awareness Week is an annual event which reminds Iowans that severe weather is a part of living in Iowa, and that understanding the risks and how to respond to them saves lives.

Topics covered this year during Severe Weather Awareness Week will include: flash flooding, receiving warnings, tornadoes, severe thunderstorms and family preparedness. The National Weather Service will issue informative public information statements each day about the daily topic, with additional information posted on our website at: [www.weather.gov/desmoines](http://www.weather.gov/desmoines).

The highlight of the week will be the statewide tornado drill on Wednesday April 6, 2011. The drill will begin around 10:00 a.m. and conclude by 11:00 a.m. for all 99 counties in Iowa. All five National Weather Service offices which serve Iowa will participate in the drill.

Additional information about Severe Weather Awareness Week and links to preparedness material and educational material regarding severe weather can be found at: [www.weather.gov/desmoines](http://www.weather.gov/desmoines). Another excellent source of information can be found at [www.BeReadyIowa.org](http://www.BeReadyIowa.org).

Media interviews are welcomed and encouraged. Interviews concerning severe weather week should be directed to Jeff Johnson, Warning Coordination Meteorologist, Des Moines, IA.



# THE WEATHER WHISPER

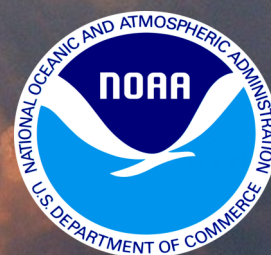
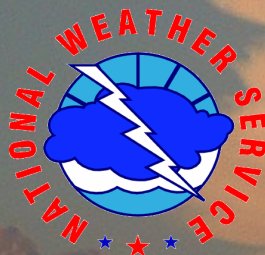
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*Photo courtesy of Kathy Ford*



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